SLOVENSKI STANDARD
SIST EN 12847:2009

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Bitumen in bitumenska veziva - Dolo evanje teģnje bitumenskih emulzij k posedanju

Bitumen and bituminous binders - Determination of settling tendency of bituminous emulsions

Bitumen und bitumenhaltige bindemittel - Bestimmung des Absetzverhaltens von Bitumenemulsionen

Bitumes et liants bitumineux - Détermination de la tendance à la décantation des émulsions de bitume

Ta slovenski standard je istoveten z: **EN 12847:2009**

ICS:

75.140	Voski, bitumni in drugi naftni proizvodi	Waxes, bituminous materials and other petroleum products
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

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EUROPEAN STANDARD

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English Version

Bitumen and bituminous binders - Determination of settling tendency of bituminous emulsions

Bitumes et liants bitumineux - Détermination de la tendance à la décantation des émulsions de bitume

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Absetzverhaltens von Bitumenemulsionen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 12847:2009) has been prepared by Technical Committee CEN/TC 336 “Bituminous binders”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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1 Scope

This European Standard specifies a method for the determination of the settling tendency of bituminous emulsions.

WARNING — The use of this standard can involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 58, *Bitumen and bituminous binders – Sampling bituminous binders*

EN 1428, *Bitumen and bituminous binders – Determination of water content in bitumen emulsions – Azeotropic distillation method*

EN 1431, *Bitumen and bituminous binders – Determination of recovered binder and oil distillate from bitumen emulsions by distillation*

EN 12594, *Bitumen and bituminous binders – Preparation of test samples*

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
settling tendency
difference in water content of the top layer and the bottom layer of a prescribed volume of sample after standing for a specified time at ambient temperature

4 Principle

The sample is allowed to stand for the specified time at ambient temperature in a stoppered graduated cylinder, after which the water contents of the top and bottom layers are determined either using EN 1428 or EN 1431. The settling tendency is calculated as the difference between the two water contents.

5 Reagents and materials

5.1 General

Use only reagents of recognised analytical grade and water conforming to grade 3 of EN ISO 3696.

5.2 Cleaning agents

As used conventionally in the laboratory.

6 Apparatus

Usual laboratory apparatus and glassware, together with the following:

6.1 Stoppered glass graduated cylinder, 600 ml capacity, with one division mark at 500 ml. This vessel is modified with two closable side tubes. The dimensions are shown in Figure 1.

The two side tubes may be closed either by a rubber or glass stopper, or by a rubber tube with a pinch-clamp cock.

6.2 Distillation apparatus, as described in EN 1428 or EN 1431, depending on the method chosen for the determination of water content.

6.3 Beakers of appropriate capacity.

7 Sampling

The material under test shall be sampled in accordance with EN 58 and prepared in accordance with EN 12594.

8 Procedure

8.1 General

Carry out the procedure under normal laboratory conditions.

NOTE "Normal laboratory conditions" means that the range of temperature is 18 °C to 28 °C.

8.2 Test

The number of test cylinders to be used shall be defined depending upon the test method used to determine water content (EN 1428 or EN 1431).

In general, one cylinder should be sufficient when EN 1428 is used, whereas 4 cylinders will be needed when using EN 1431.

Close the two side tubes of the graduated cylinder (6.1).

Pour the emulsion test sample into the cylinder until the surface of the liquid reaches the 500 ml level.

Stopper the cylinder tightly and allow to stand undisturbed for the specified time time (t ± 4 hours).

If necessary, remove any skin before drawing a test portion.

At the end of the standing period, without disturbing the contents of the cylinder, remove the stopper and draw a test portion of approximately 55 ml, from the top of the cylinder, through the upper side tube of the cylinder into a beaker (6.3). Allow 5 min for bitumen emulsion adhering to the wall of the cylinder to flow into the beaker. When several cylinders are needed, repeat the operation by drawing successively the test portion from the top of each cylinder into the receiving beaker (6.3).

Gently stir the resulting test portion (p_1) until uniform using a glass rod once the drawn off has ended.

Drain the emulsion from the middle part of the cylinder by opening the lower side tube and allowing the emulsion to flow into a container until the flow ceases. Discard this portion of emulsion.

Close the lower side tube.

Stir the remaining emulsion (approximately 55 ml), so that any sediment adhering to the wall or bottom of the cylinder is loosened.

If the homogenisation of the remaining emulsion in the bottom part of the cylinder cannot be performed correctly, due to for instance broken emulsion, the test shall be aborted. This information shall then be mentioned in the report.

Drain the remaining contents of the cylinder into a second beaker (6.3) to obtain a second test portion. When several cylinders are needed, drain successively the remaining contents of each cylinder into the second beaker (6.3).

Gently stir the resulting test portion (p_2) until uniform using a glass rod once the drawn off has ended.

Determine the water content of each test portion according to EN 1428 or EN 1431, depending on the method chosen for the determination of water content.

9 Calculation

Calculate the settling tendency, ST, of the test sample, expressed in mass percentage, by means of the following equation:

$$ST = (a - b)$$

where:

a is the water content of the top layer, i.e. the first test portion, p_1, in mass percentage;

b is the water content of the bottom layer, i.e. the second test portion, p_2, in mass percentage.

NOTE Negative values, obtained for the settling tendency, indicate that the bituminous phase rises to the surface.

10 Expression of results

Report the specified time of standing, t (see Clause 8), the water content, a, of the top layer and the water content, b, of the bottom layer (see Clause 9).

Express the result, obtained in accordance with Clause 9, as a mass percentage, rounded to the nearest 0,1 % (m/m).

11 Precision

NOTE The precision of the method was evaluated in accordance with EN ISO 4259 [1].

11.1 Repeatability

The difference between two successive test results, obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of the test method, exceed the values mentioned in Table 1 in only one case in twenty.

Table 1 — Repeatability

Settling tendency % (m/m)	**Repeatability** **r**
0 % to 8 % mass fraction	0,4 % mass fraction
> 8 % mass fraction	5 % of the result (expressed as a mass %)

11.2 Reproducibility

The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the long run, in the normal and correct operation of the test method, exceed the values mentioned in Table 2 in only one case in twenty.

Table 2 — Reproducibility

Settling tendency % (m/m)	Reproducibility **R**
0 % to 8 % mass fraction	0,8 % mass fraction
> 8 % mass fraction	10 % of the result (expressed as a mass %)

12 Test report

The test report shall contain at least the following information:

a) type and complete identification of the sample under test;

b) reference to this European Standard;

c) result of the test, the settling tendency, ST, and the specified time of standing/settling, t, the water content, a, of the top layer and the water content, b, of the bottom layer (see Clause 10);

d) any deviation, by agreement or otherwise, from the procedure specified (for example any case of emulsion adhering to the wall or bottom);

e) date of sampling, date of sample preparation and date of the test.